9.6: Cardiac Muscle

- Located only in the heart
- Muscle fibers joined together by intercalated discs
- Fibers branch
- Network of fibers contracts as a unit
- Self-exciting and rhythmic
- Longer refractory period than skeletal muscle

Characteristics of Muscle Tissue

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.

TABLE 9.2 | Characteristics of Muscle Tissues

	Skeletal	Smooth	Cardiac
Dimensions			
Length	Up to 30 cm	30–200 µm	50–100 µm
Diameter	10–100 µm	3–6 µm	14 µm
Major location	Skeletal muscles	Walls of hollow organs	Wall of the heart
Major function	Movement of bones at joints; maintenance of posture	Movement of walls of hollow organs; peristalsis; vasoconstriction	Pumping action of the heart
Cellular characteristics			
Striations	Present	Absent	Present
Nucleus	Multiple nuclei	Single nucleus	Single nucleus
Special features	Transverse tubule system is well developed	Lacks transverse tubules	Transverse tubule system is well developed; intercalated discs separate cells
Mode of control	Voluntary	Involuntary	Involuntary
Contraction characteristics	Contracts and relaxes relatively rapidly	Contracts and relaxes relatively slowly; some types self-exciting; rhythmic	Network of fibers contracts as a unit; self-exciting; rhythmic; remains refractory until contraction ends

9.7: Skeletal Muscle Actions

- Skeletal muscles generate a great variety of body movements.

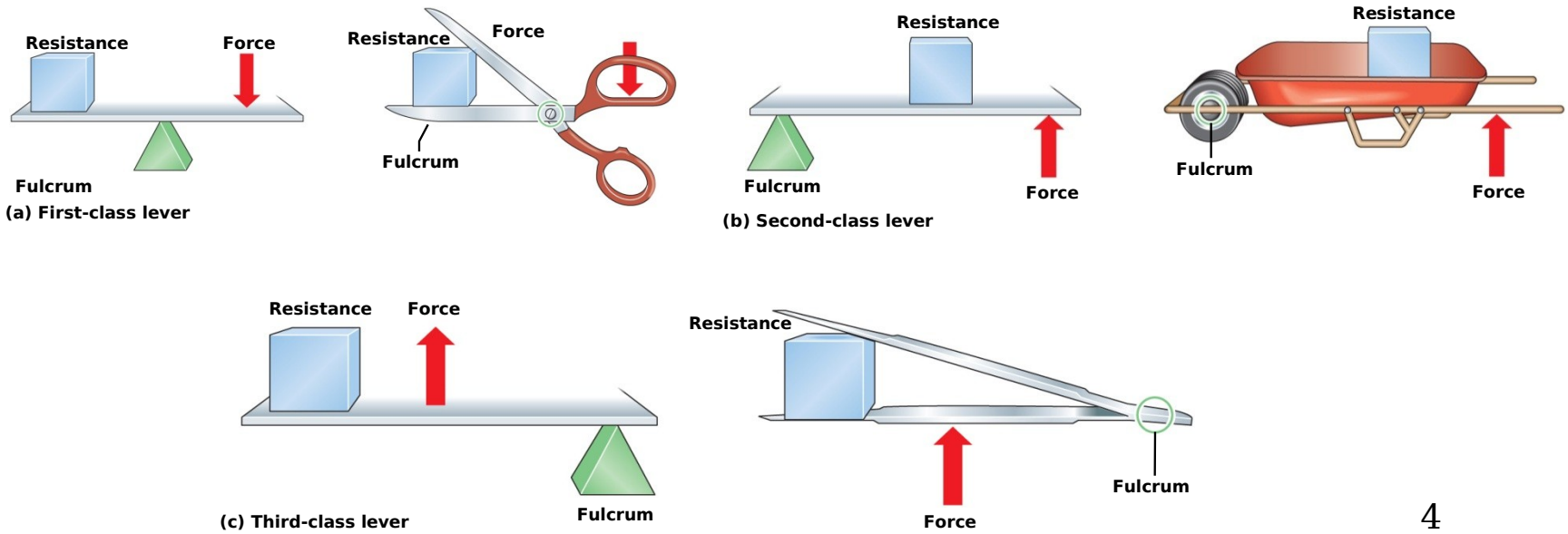
- The action of each muscle mostly depends upon the kind of joint it is associated with and the way the muscle is attached on either side of that joint.

Body Movement

Four Basic Components of Levers:

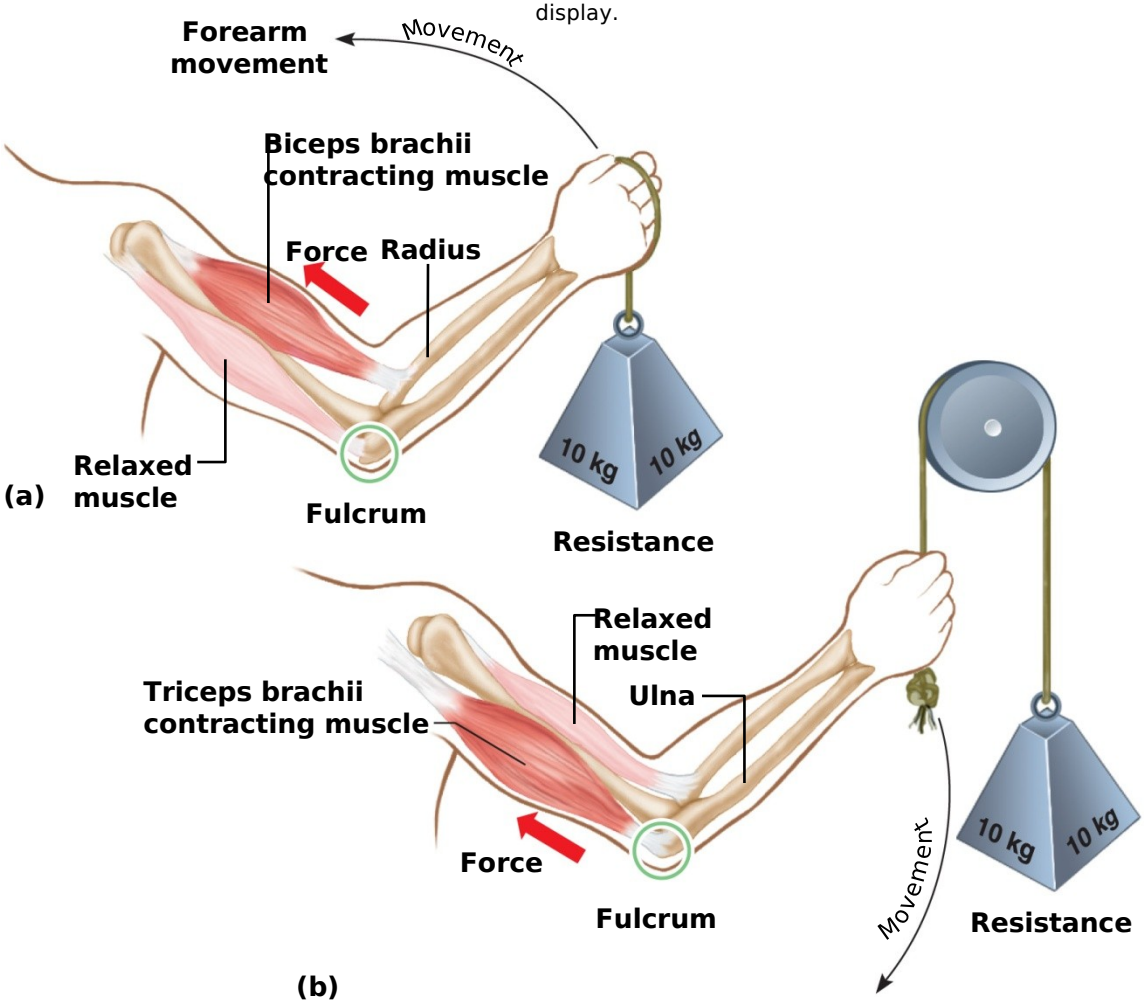
1. Rigid bar – bones
2. Fulcrum – point on which bar moves; joint
3. Object - moved against resistance; weight
4. Force – supplies energy for movement; muscles

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



Levers and Movement

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.



Origin and Insertion

- Origin – immovable end
- Insertion – movable end

Copyright © The McGraw-Hill Companies, Inc. Permission required for reproduction or display.